GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

COURSE CURRICULUM

Course Title: Basic of Civil Engineering
(Code: 3320004)

Diploma Programmes in which this course is offered	**Semester in which offered**
Electrical Engineering ,Mechanical Engineering, Fabrication Technology	Second Semester

1. RATIONALE:

A mechanical or electrical technician is expected to look after many activities at work place, which may be interdisciplinary, for example if he/she has to mount a heavy machine, he should be able to supervise the preparation of foundation for it, which requires the knowledge of civil engg. Therefore he/she is supposed to be exposed to very basics of civil engineering. This course mainly encompasses the major and general areas of civil engineering, knowledge of which may be required by mechanical and electrical engineers/technicians.

2. COMPETENCIES:

The course content should be taught and implemented with the aim to develop different types of skills so that students are able to acquire following competencies:

- **To supervise the simple civil engineering tasks related to own branch's integrated tasks.**

3. TEACHING AND EXAMINATION SCHEME:

Teaching Scheme (In Hours)			**Total Credits (L+T+P)**	**Examination Scheme**				
				Theory Marks		**Practical Marks**		**Total Marks**
L	**T**	**P**	**C**	**ESE**	**PA**	**ESE**	**PA**	
0	1	2	3	0	0	20	30	**50**

Legends: L-Lecture; **T** – Tutorial/Teacher Guided Student Activity; **P** -Practical; **C** – Credit;; **ESE** -End Semester Examination; **PA** - Progressive Assessment.

Note: It is the responsibility of the institute heads that marks for **PA of theory** & **ESE and PA of practical** for each student are entered online into the GTU Portal at the end of each semester within the dates specified by GTU.

4. DETAILED COURSE CONTENTS:

Unit	Major Learning Outcomes	Topics and Sub-topics
Unit –1 **CIVIL ENGG. SURVEYING**	**1a.** Use surveying tools and equipments for field survey, leveling and measurements **1b.** Calculate different levels and angles **1c.** Understand given contour map	1.1 Surveying & leveling (its importance and types) 1.2 Necessity for leveling 1.3 Principals of surveying 1.4 Instrument/ tools used for survey and level 1.5 Various methods of finding the field survey measurements 1.6 Chain and Compass Survey 1.7 Preparations of contour sheets/ plan using survey data. 1.8 Procedure of leveling
Unit – 2 **CIVIL ENGG. DRAWING**	**2a.** Read and Interpret the building drawing **2b**. Plan lay out of a simple building	2.1 Types of building drawings 2.2 Abbreviation, conventions & symbols in civil drawing 2.3 Building byelaws for planning of residential building and industrial building 2.4 Planning of simple residential and industrial building
UNIT –3 **CONSTRUCTION MATERIALS**	3a. Select different types of construction materials as per requirements 3b. Test given construction materials for quality control 3c. Prepare approximate cost estimates	3.1 Common construction materials such as cement, Brick, Stone, Timber, Steel and Concrete. 3.2 Properties of each materials & their acceptable standards 3.3 Quality parameters of materials 3.4 Estimations and costing for simple structure (only the material cost)
Unit –4 **MACHINE FOUNDATIONS**	4a. Assess the typical requirements of foundations for medium sized electrical and Mechanical Machines.	4.1Criteria for machine foundation 4.2Provisions for foundation design considerations in machine foundations. 4.3Factors to be considered while designing machine foundations such as type of soil 4.4Design foundations for simple machine like lathe, compression press, universal testing machine , electric power hammer etc. BIS CODE of practice for machine foundations I.S.- 2974 - Part –I& II

5. SUGGESTED SPECIFICATION TABLE WITH HOURS & MARKS (THEORY)

Unit No.	Unit Title	Tutorial Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total
I.	Civil engineering Surveying	04	NOT APPLICABLE			
II.	Civil engineering drawing	04				
III.	Construction materials	02				
IV.	Machine foundations	04				
	Total	14				

Legends: R = Remember; U = Understand; A = Apply and above levels (Bloom's revised taxonomy)

Note: This specification table shall be treated as only general guideline for students and teachers. The actual distribution of marks in the question paper may vary from above table.

6. SUGGESTED LIST OF PRACTICAL/EXERCISES

The experiments should be properly designed and implemented with an attempt to develop different types of skills so that students are able to acquire above mentioned competency. This is the list of minimum experiments to be performed.

Ex. No.	Unit No.	Practical/Exercises	Approx Hours Required
1	I	Practice for linear measurements through ranging, chaining, taping offsetting, recording field book etc.	04
2	I	Practice for working on prismatic compass, dumpy Levels, for taking measurements and , recording length and angles.	04
3	II	Prepare surveying drawings using surveyed data	04
4	III	Test few construction materials such as cement, brick etc in laboratory	04
5	IV	Visit of industry to observe the machine foundation and study of foundation design	04
6	III	Market survey of construction materials and prepare of cost estimation	04
7	IV	Observe and draw machine foundation for some heavy machines.	04
Total			28

7. SUGGESTED LEARNING RESOURCES:

A. List of Books.

Sr.No.	Title of Books	Author
1	Text book on Surveying&leveling	T.P.Kanitkar
2	Text hook on Surveying&leveling	B.C.Punmia
3	Civil Engineering Drawing	Shah Kalel&Patkil
4	Engineering Material	S.C.Rangwala
5	Properties of concrete	A.M.Neville

B.List of Major Equipment/ Instrument.

1.Chain (10m, 20m, 30m, etc.)

2.Measure Tape, Ranging rods

3.Prismatic compass, Surveyor compass

4.Dumpy level, Tilting level

5.Compressive Testing Machine

C. List of Software/Learning Websites: QE PRO for estimation, Autocad for drawings

9. COURSE CURRICULUM DEVELOPMENT COMMITTEE

Faculty Members from Polytechnics

- **Prof. Bhavesh Modi** Principal ,B V P I T (DS) Umrakh Ta. Bardoli
- **Mr. Krishnaraj A. Khatri** L C E, B V P I T (DS) Umrakh Ta. Bardoli
- **Mrs. A. N. Pamnani** L C E ,B B I T , V V Nagar
- **Mrs. Rina Chokshi** L C E, P I E T (DS) Limda Vadodara

Co-ordinator and Faculty Members from NITTTR Bhopal

- **Dr. J.P.Tegar**, ProfessorDept of Civil and Environmental Engg,